

## New herbage plant cultivars

### A. Grasses

#### 26. *Danthonia*

##### (a) *Danthonia richardsonii* Cashmore (wallaby grass) cv. Taranna

Reg. No. A-26b-1. Registered on November 9, 1992.

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*Released by* Head Licensee, Lachlan Valley Seeds Pty Ltd, Forbes, NSW 2871.

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#### Origin

Derived from a single plant of a natural ecotype collected by Dr G.M. Lodge from a stock route (31°20'S, 150°51'E, 506 m elevation, average annual rainfall 650 mm) located on a red-brown earth, 30 km south of Tamworth in northern New South Wales (NSW). The parent plant of Taranna was 1 of 871 *D. richardsonii* plants collected throughout NSW in 1985–86. Plants were grown in nursery rows at the Agricultural Research Centre, Tamworth and selected for seed retention and yield. Seed retention was improved by selection over 4 generations for ovate seed heads, containing large glumes and closely packed florets.

Taranna was submitted by NSW Agriculture and recommended for registration in the Standing Committee on Agriculture Scheme by the New South Wales Herbage Plant Liaison Committee. NSW Agriculture will maintain breeders' seed. Pre-basic, basic and certified seed will be produced by growers under contract to the Head licensee. Taranna has been granted Plant Variety Rights (Anon. 1992; Application No. 91/098.)

#### Morphological description

Plants of Taranna have a chromosome number  $2n = 48$  and are self-fertilising. They are  $C_3$ ,

caespitose, frost-tolerant, perennials that are native to Australia. Plants of the genus are readily recognised by their distinctive white or light brown inflorescences, hence the common names of silver-top, white-top, fluffy-top or wallaby grass. Taranna is an erect plant, up to 70 cm tall, but more generally 50–60 cm. The culms are moderately stout, 0.75–2.2 mm diameter and about 3–4-noded. Leaves are glabrous, smooth, striate, clasping the culms or somewhat loose above. The ligule is densely ciliate with 0.5 mm hairs, loosely bearded with hairs up to 5 mm long at the sides. Leaf blades are 100–260 mm long by 2.3–5.2 mm wide, gradually narrowing to a long acuminate tip, loosely inrolled on drying, glabrous, lightly striate above, the lower surface smooth. The panicle is dense, ovate 40–100 mm long and branches near the base; together with its short pedicels it is scabrous to pubescent. The spikelets are usually pale green when young and straw coloured when mature, 10–15 mm long and 4–6 flowered with the florets closely packed and slightly shorter than the glumes, except for the very short central awn. The glumes have broadly membranous margins, shortly acuminate, smooth and broadcast about the middle. The body of the lemma has abundant hairs scattered over the back with short hairs above the callus gradually lengthening to longer hairs below the sinus. The lateral lobes are less than twice as long as the body of the lemma. Palea is broadly obovate and obtuse, usually only shortly exceeding the sinus. Florets of Taranna have three yellow anthers about 2–2.5 mm long. Caryopsis is straw coloured to medium brown, obovate and about 2.2 x 1.2 mm, with the embryo up to 1.25 mm. The caryopsis is convex on the embryo side, with a shallow groove on the back. Average caryopsis weight is 6.89 mg (1.45 million seeds per kg).

In comparative trials (Lodge and Schipp 1993) Taranna was morphologically distinguishable from cv. Hume and 2 other natural ecotypes by its wider inflorescence, wider and longer flag leaf and wider third tiller leaf.

### Agronomic characters

*Danthonia* spp. are widely regarded for their drought resistance and their ability to grow and persist in areas of low fertility (e.g. Scott and Whalley 1982). *D. richardsonii* occur naturally on a range of soil types in all tablelands and slopes environments (Jacobs and Pickard 1981; Scott and Whalley 1982) and all coastal areas of NSW except the south coast (Vickery 1956; Jacobs and Pickard 1981). They are also commonly found in the northern and southern western plains (Vickery 1956) as well as in Queensland, Victoria and South Australia (Vickery 1956; Wheeler *et al.* 1982). *D. richardsonii* plants are also tolerant of saline conditions (Scott and Whalley 1982) and Taranna is moderately tolerant of acid soils (K. Helyar, personal communication).

When grown as spaced plants early generation selections of Taranna had similar dry matter yields and crude protein levels to *D. linkii* plants (Lodge 1992). Taranna has higher herbage production than unselected ecotypes of *D. richardsonii* (Lodge and Schipp 1993). Periods of most active growth are spring and early summer, although an outstanding feature of Taranna is its green leaf production in winter and its frost-hardiness.

Plants flower and set seed in late spring, early summer. While this is the main period for seed production, plants can flower again in summer and early autumn, with adequate moisture. The time from floral initiation to harvest varies from 50–75 days for Taranna. Seed production of Taranna was twice that of cv. Hume and 4 times higher than the mean of the unselected ecotypes (Lodge 1992; Lodge and Schipp 1993). Removal of the palea and lemma enhances germination for both freshly harvested seed and seed stored for up to 2 years, with germination being over 95% for both groups.

Taranna is considered to have its greatest potential for aerial establishment in non-arable hill country, where stocking rates are low and other existing grass cultivars have proved difficult

to establish. *D. richardsonii* is a noted coloniser of bare areas (Scott and Whalley 1982) and with its natural mechanism of seed dispersal, it is well suited to surface establishment (Lodge 1992), and so may have a role in the restoration of degraded cropping lands. Taranna may also have potential for use in soil erosion control and amenity areas, such as recreational sites, as well as in mining reclamation and revegetation. There are currently no other cultivars of this species registered for agricultural production.

### Acknowledgements

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### References

- ANON. (1992) Wallaby grass (*Danthonia richardsonii*) variety 'Taranna'. *Plant Varieties Journal, Australia*, **5**(1), 18–20.
- JACOBS, S.W.L. and PICKARD, J. (1981) Plants of New South Wales. *A Census of the Cycads, Conifers and Angiosperms*. (Government Printer: Sydney).
- LODGE, G.M. (1992) The domestication of native grasses for pastoral use. *Proceedings of the 6th Australian Agronomy Conference, Armidale*, pp. 456–459.
- LODGE, G.M. and SCHIPP, A.J. (1993) The domestication of the native grasses *Danthonia richardsonii* Cashmore and *Danthonia linkii* Kunth for agricultural use. II Agronomic/morphologic variation. *Australian Journal of Agricultural Research*, **44** (in press).
- SCOTT, A.W. and WHALLEY, R.D.B. (1982) The distribution and abundance of species of *Danthonia* DC on the New England Tablelands (Australia). *Australian Journal of Ecology*, **7**, 239–248.
- VICKERY, JOYCE, W. (1956) A revision of the Australian species of *Danthonia* DC. Contributions from the New South Wales National Herbarium. (NSW Department of Agriculture: Sydney).
- WHEELER, D.J.B., JACOBS, S.W.L. and NORTON, B.E. (1982) *Grasses of New South Wales*. (University of New England Publishing Unit: Armidale).